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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,406	10/07/2003	Kiyoshige Muraoka	1403-0256P	5490

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EXAMINER	
KNABLE, GEOFFREY L	

ART UNIT	PAPER NUMBER
1733	

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/679,406	MURAOKA ET AL.	
	Examiner	Art Unit	
	Geoffrey L. Knable	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-15 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-15 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 10-7-03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Claims 2-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 1 of claims 2, 5 and 8, reference is made to features of "a gas barrier layer" - it however is not clear whether this is the same as the gas barrier layer already defined in claim 1. As it is assumed that it is further defining the gas barrier layer already referred to in claim 1, it is suggested this be reflected within these claims ("said" or "the", etc.).

In claim 7, line 2, the use of "wherein," when read in light of the following lines, is grammatically awkward and confusing. It is suggested that "wherein" be changed to "comprising" to avoid this ambiguity. This same ambiguity is present in claim 8, line 3.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3, 5, 6, 10/5 and 11/10/5 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over WO 98/56598 to Feeney et al.[1]

WO '598 to Feeney et al. discloses a tire including a gas barrier layer coating on the inner surface thereof, this layer including an inorganic layered filler of clearly smaller particle size (read as layer thickness) than the claimed upper limit. Further, this layered filler is described as having an aspect ratio of greater than 25, preferably greater than 100 (e.g. pages 15-16); an aspect ratio of 1000 or greater is also mentioned (e.g. page 20, line 7). It however is not clear that the aspect ratio as defined in this reference can be directly compared to the aspect ratio as presently defined in the present application - the similarity in actual values as well as in structure and function of the layered filler is however considered to provide sufficient basis to believe that the reference teachings would teach or render obvious aspect ratio values as claimed, the burden properly shifting to applicant to show otherwise. As to the claim 1 reference to a "resin", it is

[1] It is noted that a copy of this reference is of record in this file (having a receipt date of 4-23-2004) and thus no copy has been provided. It is also noted that this copy was accompanied by several other references as well as an apparently corresponding EP search report (all dated 4-23-2004). No IDS or form listing these references however is of record. As such, if applicant desires the other references to be made of record, a listing (e.g. PTO-1449) should be provided.

considered that some or all of the wide selection of materials, including various thermoplastic polymers, defined at pages 13 and 14 can be termed "resins." Likewise, it is considered that at least some of the resins mentioned can also be termed high hydrogen bond resins, it being especially noted that the reference indicates at page 13, line 10 that the polymer may be soluble in water - this seemingly suggests a resin that can meet this claim requirement. As to claim 3, note page 15, lines 18-19 suggests a weight ratio of filler of 5-55%. As to claim 5, note page 23, lines 9+ suggest application to a butyl innerliner, this being considered to implicitly suggest or certainly render obvious that the liner contain predominantly butyl rubber, as is well known in this art. As to claim 6, the suggestion for coating in a manner in which multiple passes of the barrier mixture are applied (e.g. page 57, lines 11+) is considered to suggest a barrier layer and anchor coat (i.e. the first pass can be termed an anchor coat for subsequent passes). As to claim 10, the layered material is applied dispersed/exfoliated in a solvent. As to claim 11, note page 27, lines 23-26.

6. Claims 7, 8, 10/8, 11/10/8, 12, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 98/56598 to Feeney et al. as applied above, and further in view of Kresge et al. (US 5,576,372) and Hopkins et al. (US 2001/0009948).

As to claims 7 and 8, WO '598 to Feeney et al. suggests both application to a butyl innerliner as well as coating of the carcass rubber directly without an innerliner (esp. pages 22-24) but does not provide specifics of the composition of the butyl based innerliner or carcass layer. Kresge et al. is also directed to improving the barrier properties of rubber barrier layers (both innerliner as well as part of the carcass - note

col. 2, lines 12-15) and suggests inclusion therein of layered fillers having a high aspect ratio (e.g. col. 5, lines 66+) in order to enhance the barrier properties of these rubbers, including both butyl (e.g. col. 1, lines 62-65) and non-butyl rubbers. The inclusion of a dispersed layered filler in other layers in the tire including the innerliner and/or carcass coating rubbers would therefore have been obvious in order to further enhance the air diffusion resistance of the tire. As to the inclusion of a silica or other filler and silane coupling agent in these layers, it is first noted that it is well known in this art to incorporate silica (with a coupling agent as typical) in elastomers to improve various properties thereof (e.g. note paragraph [0002] of Hopkins et al.), Hopkins et al. further providing motivation to the artisan to include silica/silane coupling agent filler systems in butyl rubber innerliner layers. To include silica and silane coupling agent in any of the layers including the butyl layers would therefore have been obvious for only the expected results.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over the above applied prior art as applied to claims 7 and 8 above, and further in view of EP 601,877 to Ou et al.

Page 15, lines 5-7 of WO '598 refer to EP '877 to Ou et al. as relating to a suitable layered filler, it being noted that EP '877 suggests an "organo" modified vermiculite (e.g. note the abstract).

8. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaido et al. (US 6,136,123) taken in view of at least one of [Kotani et al. (US 5,700,560) or Kotani et al. (US 6,316,093)].

Kaido et al. discloses a tire including an air permeation prevention layer in the form of a thermoplastic film material (including polyvinyl alcohol - note col. 3, line 25). Inclusion of a layered filler in the film resin as claimed is not however suggested. The Kotani et al. patents clearly disclose a film/laminate of a gas barrier resin composition including a high hydrogen resin and inorganic layered compound that clearly explicitly meets each of the claimed requirements for the gas barrier layer, the use of the layered compound in the resin providing the very high gas barrier properties. Given that Kaido et al. desires a thermoplastic that provides high gas barrier properties, it would have been obvious to adopt a resin that includes the layered filler as claimed for the Kaido et al. tire in light of the teachings of the Kotani et al. patents for the expected improvement in gas barrier properties, which properties are clearly desired in Kaido et al.

9. Claims 5, 6, 9, 10/5 and 11/10/5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaido et al. (US 6,136,123) taken in view of at least one of [Kotani et al. (US 5,700,560) or Kotani et al. (US 6,316,093)] as applied to claims 1-4 above, and further in view of WO 98/56598 to Feeney et al.

As to claim 5, Kaido et al. does not clearly indicate whether the resin film is totally in place of or supplements the innerliner. WO '598 to Feeney is directed to a similar tire that includes a coated gas barrier film on the inner surface and in particular suggests both application to a butyl innerliner as well as coating of the carcass rubber directly without an innerliner (esp. pages 22-24), this being considered to render it obvious to provide the film in place of or in addition to the butyl innerliner and thus application to a typical butyl liner that contains predominantly butyl rubber, as is well known in this art,

would have been obvious. As to claim 6, Kaido et al. clearly suggests an adhesive for the thermoplastic film. The claims 9-11 requirements are clearly taught by the Kotani et al. patents.

10. Claims 7, 8, 10/8, 11/10/8 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaido et al. (US 6,136,123) taken in view of at least one of [Kotani et al. (US 5,700,560) or Kotani et al. (US 6,316,093)] and WO 98/56598 to Feeney et al. as applied above, and further in view of Kresge et al. (US 5,576,372) and Hopkins et al. (US 2001/0009948).

As to claims 7 and 8, as noted above, in light of WO '598 to Feeney et al., application to either a butyl innerliner or coating of the carcass rubber directly without an innerliner are considered to both have been obvious alternatives to the ordinary artisan. As to the compositions of the butyl liner or carcass layer, Kresge et al. is also directed to improving the barrier properties of rubber barrier layers (both innerliner as well as part of the carcass - note col. 2, lines 12-15) and suggests inclusion therein of layered fillers having a high aspect ratio (e.g. col. 5, lines 66+) in order to enhance the barrier properties of these rubbers, including both butyl (e.g. col. 1, lines 62-65) and non-butyl rubbers. The inclusion of a dispersed layered filler in other layers in the tire including the innerliner and/or carcass coating rubbers would therefore have been obvious in order to further enhance the air diffusion resistance of the tire, the particular aspect ratio being within the selection of the artisan, it being further noted that the Kotani et al. patents would have indicated to the artisan the advantages of adopting an aspect ratio within the claimed range in terms of providing good gas barrier properties. As to the

inclusion of a silica or other filler and silane coupling agent in these layers, it is first noted that it is well known in this art to incorporate silica (with a coupling agent as typical) in elastomers to improve various properties thereof (e.g. note paragraph [0002] of Hopkins et al.), Hopkins et al. further providing motivation to the artisan to include silica/silane coupling agent filler systems in butyl rubber innerliner layers. To include silica and silane coupling agent in any of the layers including the butyl layers would therefore have been obvious for only the expected results.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey L. Knable whose telephone number is 571-272-1220. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Geoffrey L. Knable
Primary Examiner
Art Unit 1733

G. Knable
September 30, 2005